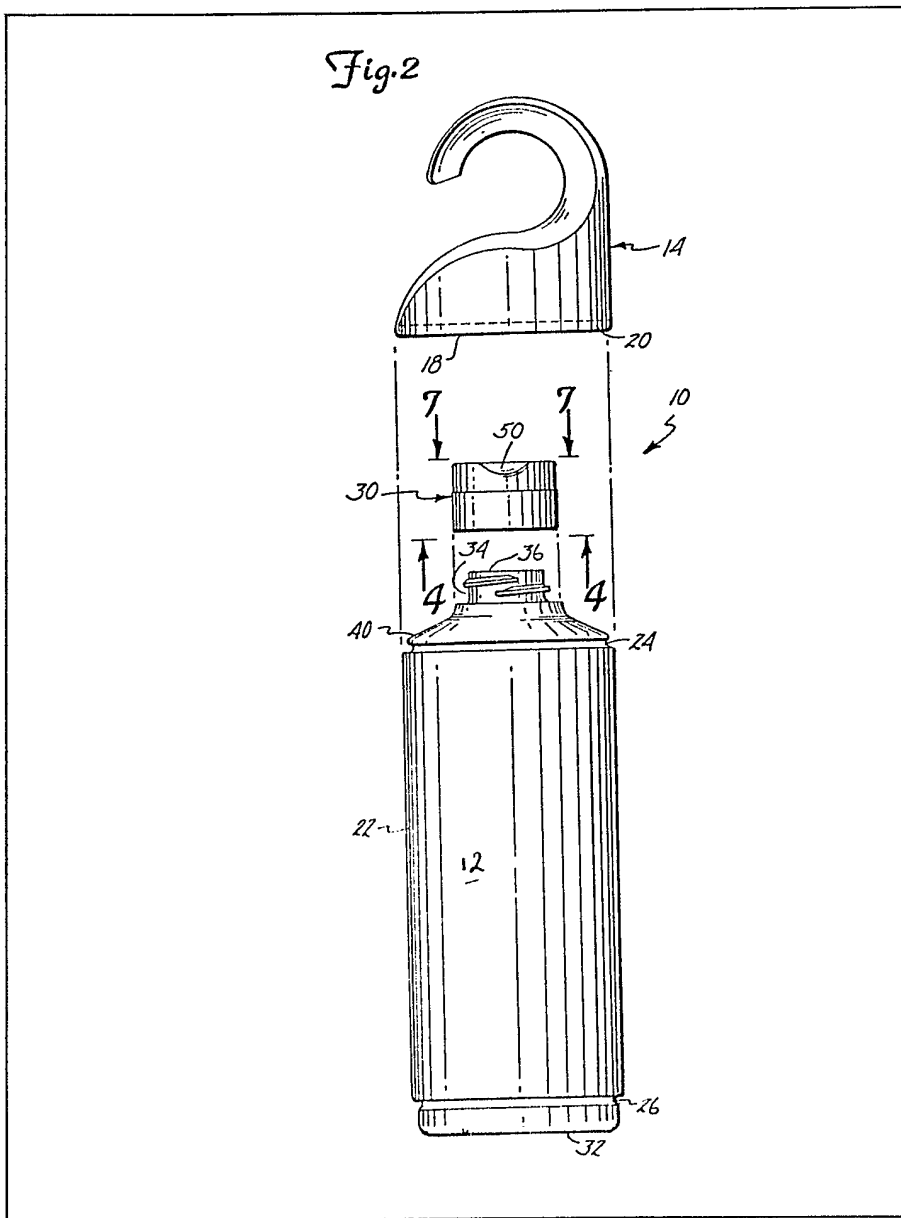


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**(54) Apparatus for dispensing liquid soap**

(57) A container 10 for dispensing personal care or household items, especially liquid soap, is disclosed. The container includes a hook-shaped

cap 14 fastenable at either end of a resilient bottle 12 so that it functions to aid storage and dispensing. The bottle may be fitted with a valve cap 30 which includes a valve operable in response to internal bottle pressure created by manual squeezing.



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Fig. 2

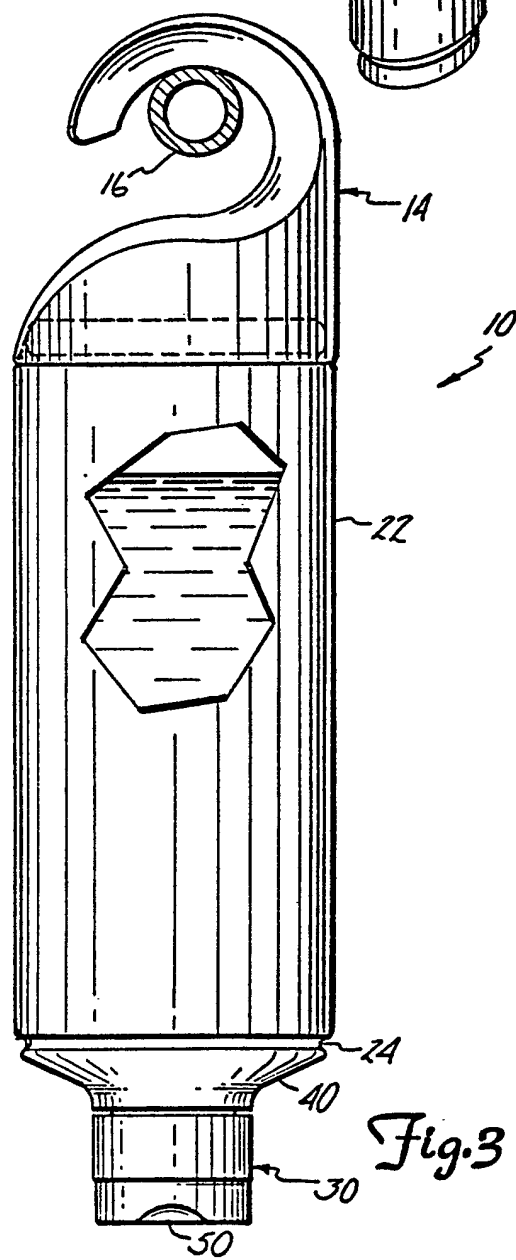
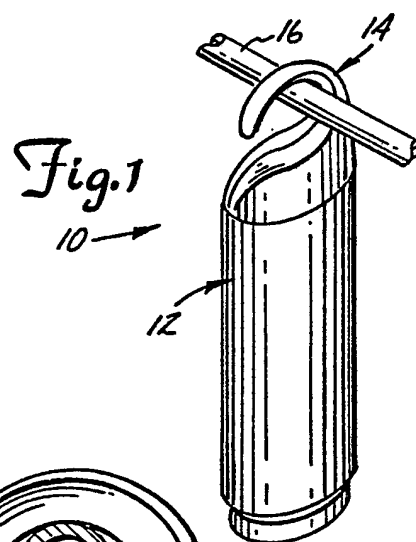
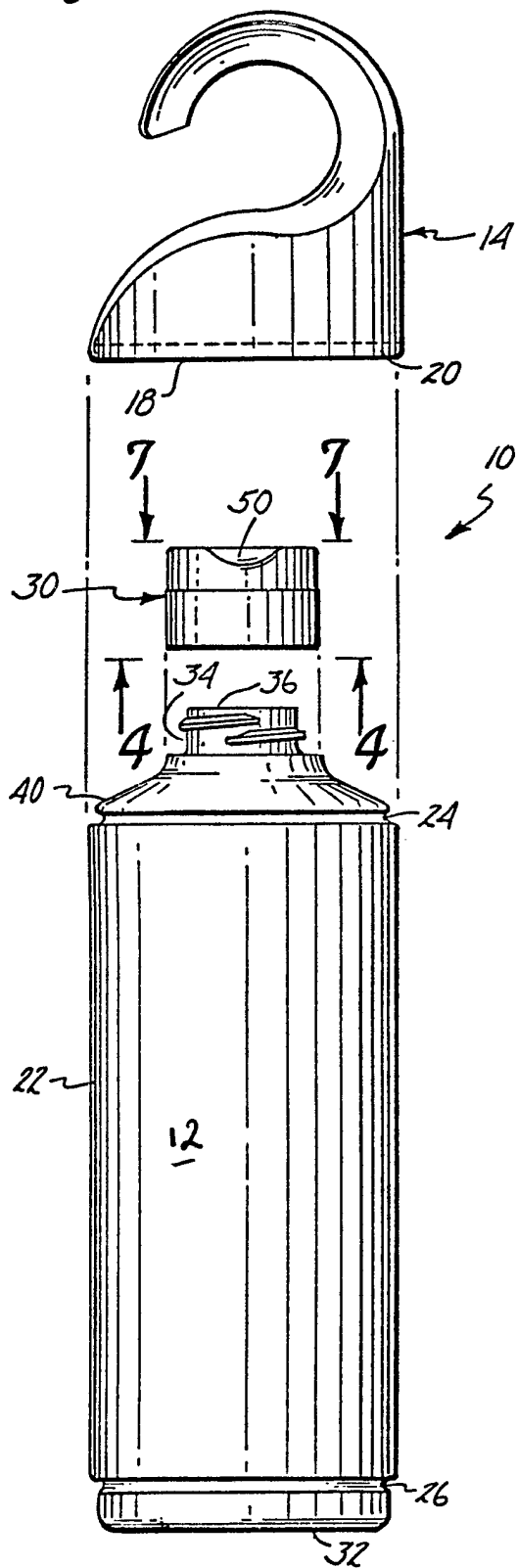


Fig. 4

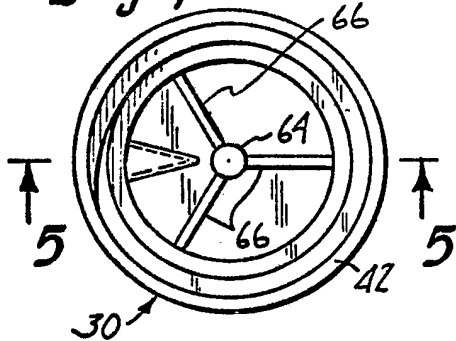


Fig. 5

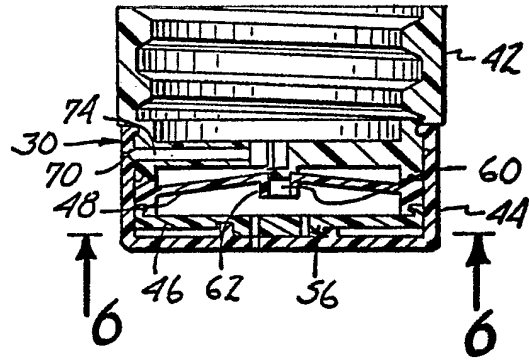


Fig. 6

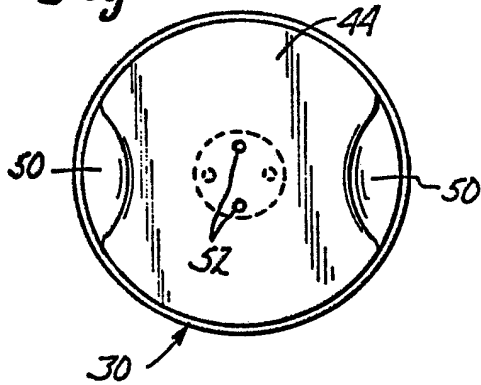


Fig. 7

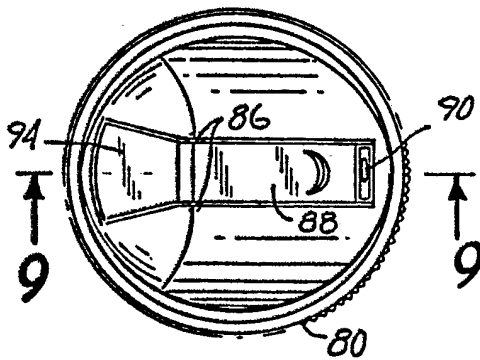
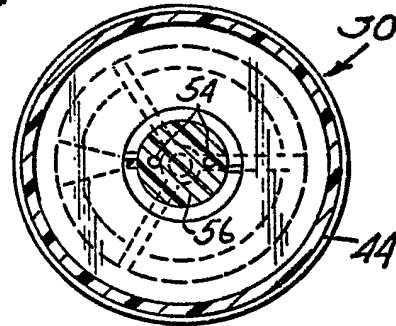


Fig. 8

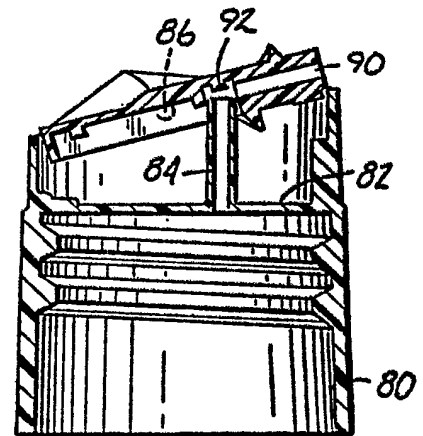


Fig. 9

## SPECIFICATION

**Apparatus for dispensing liquid soap**

This invention relates generally to containers, and more particularly concerns a container particularly but not exclusively suited for dispensing liquid soap, skin care liquids, or other personal care of household items.

One of the principal applications envisioned for this invention is as a container and dispenser for liquid soap to be used for showers. Use of traditional bar soaps in showers tends to be both wasteful and messy. Much of the soap is lost as a result of overspray from the showerhead which reaches the dish in which the soap is stored. This causes softening and messiness of the soap. It also results in loss of a high percentage of the soap, since the soap is eroded and washed from the bar by overspray during showering. In addition, the slipperiness of bar soaps under such conditions causes them to be frustratingly difficult to use. They tend to make frequent accidental trips to the shower floor.

While use of liquid soap in a push-top dispenser container may alleviate some of these problems, this use tends to create a different set of problems. Such containers will not fit conventional shower stall soap dishes. They must be placed inconveniently on the shower floor.

The present invention is aimed at eliminating these shortcomings. The invention provides apparatus for dispensing a liquid. Although it is intended primarily for dispensing liquid soap in a shower-type setting, it is not believed to be limited to that application. However, in that application, it provides a structure which allows convenient storage of liquid soap during shipping, convenient mounting of a container and dispenser in a shower stall or other setting, and convenient one-handed dispensing of the liquid held by the container.

According to this invention, there is provided a dispensing container for viscous liquids, comprising:

- (a) a hollow plastic bottle having side walls sufficiently resilient in nature to deform upon manual pressure, and having an apertured top and closed bottom;
- (b) a valved cap mounted over said aperture to effect selectable closure of said bottle; and
- (c) a hook-shaped cap adapted to be fastened over either end of said top or bottom.

The container of the invention is in the form of a bottle. The bottle is constructed of a resilient material so that the side walls of the bottle may be squeezed to create internal pressure within the bottle. The bottle is fitted with a cap which includes a valve. In some embodiments of the invention the valve may open in response to internal pressure created by squeezing the bottle, and close upon release of squeezing pressure after venting results in pressure equalization within the bottle.

The bottle is also fitted with a storage and hanger cap. This is a generally hook-shaped cap fastened over the valve cap during shipping and storage, but fastenable also at the bottom end of

the bottle to permit the bottle to be hung in inverted fashion from a shower-head pipe, shower curtain rod, or any other suitable place.

Such a container permits a liquid soap product to be sold in a unitary container which

incorporates the hanger as a protective cap. In use, the consumer removes the storage and hanger cap, fastens it to the bottom of the bottle or container, mounts the bottle or container in a convenient location by means of the hanger cap, and it is ready to use. It is then used by squeezing the flexible or resilient side walls of the container to dispense the liquid soap or other material from the valve cap.

In some embodiments, the valve cap incorporates a valve which permits one-handed dispensing, and which both opens and closes in response to the internal bottle pressure created by squeezing action.

For a better understanding of the invention and to show how the same can be carried into effect, reference will now be made by way of example only to the accompanying drawings, wherein:

FIGURE 1 is a perspective view of apparatus constructed according to one embodiment of the present invention, in which the hanger cap is hung from a shower curtain rod fragmentarily shown;

FIGURE 2 is an exploded elevational view of the structure of FIGURE 1, showing the embodiment of FIGURE 1 in a storage or shipping configuration;

FIGURE 3 is an elevational view of the invention of Figure 1, portions broken away and shown in dotted, to illustrate liquid storage and fastening of the hanger and storage cap to the bottle in a dispensing configuration;

FIGURE 4 is a view of the structure of FIGURE 2, showing a particular type of valving structure utilizable in one embodiment of the invention;

FIGURE 5 is a sectional view of the structure of FIGURE 4 taken along the line 5—5 of FIGURE 4;

FIGURE 6 is a partially sectional view taken along the line 6—6 of FIGURE 5;

FIGURE 7 is a top plan view of a cap structure according to one embodiment of the present invention, taken generally along the line 7—7 of FIGURE 2;

FIGURE 8 is a top plan view of an alternative valve cap structure for use with the present invention; and

FIGURE 9 is a sectional view of the structure of FIGURE 8 taken generally along the line 9—9 of FIGURE 8.

In the drawings, like reference numerals throughout the several views denote like elements.

Referring to the drawings, there is shown apparatus generally designated 10 for dispensing of a liquid material, which in a typical application of this invention will probably be a container used for dispensing liquid soap in the shower.

Apparatus or container 10 comprises a container or bottle generally designated 12 to which other parts of the apparatus invention of this application are attached. Bottle 12 is an elongate, ovaloid cross-section bottle. It is constructed of a resilient

material. In the preferred embodiment, the material is a plastic material of a polymer with a quick enough memory or reaction to cause the bottle to readily snap back or return to its original shape on release of manual squeezing pressure. The ovaloid cross-section was selected to facilitate the fast reaction desired. While it is possible that polyethylene and other plastics might be used as a material for bottle 12, the presently preferred material is extrusion blow-moulded polyvinyl chloride (PVC). In one embodiment designed the PVC used was .060 inch thick.

Apparatus or container 10 is shown in FIGURE 1 in a dispensing position with a hanger and storage cap generally designated 14 fastened to the bottom of the bottle 12. The inverted bottle 12, cap 14 combination is shown hung from a portion of a shower curtain rod designated 16 in the figure. While container 10 is shown hung from a shower curtain rod, it might well be hung conveniently from the showerhead supply pipe, tap valve extension, wash-towel rod, or other suitable projection in a shower stall or other location.

FIGURE 2 is an exploded elevational view showing different parts of one embodiment of the present invention. At the top of FIGURE 2 is hanger and storage cap 14. Cap 14 is preferably of a hollow cap constructed of a resilient plastic material. It has a fastening aperture 18. In preferred embodiments of the invention, the fastening aperture is of an ovaloid shape sized to generally conform to the cross-sectional shape and size of bottle 12. Cap 14 is provided with an inwardly directed lip 10, which extends generally inwardly about the periphery of fastening aperture 18.

In the embodiment shown, bottle 12 has a substantially uniform cross-section ovaloid side wall 22. Ovaloid side wall 22 is broken near its top and bottom by upper and lower fastening grooves 24 and 26 respectively. These grooves are reduced diameter portions of ovaloid side wall 22 which are also generally ovaloid in shape. They are sized to receive lip 20 of cap 14 in a snap-fit relationship. Cap 14 snap-fits onto the top of bottle 12 by resiliently extending over and into groove 24. In this position, cap 14 covers and protects the top of bottle 12 and its associated valve cap generally designated 30.

As shown best in FIGURE 2, bottle 12 has a bottom wall 32 which extends generally transversely of ovaloid side wall 22 and is placed proximate lower cap fastening groove 26 to seal bottle 12 and create a cavity to contain liquid.

At the upper end of bottle 12 is a circularly cylindrical cap wall portion 34. Cap wall portion 34 is provided with suitable means for attachment of valve cap 30. In the embodiment shown in Figure 2, cap wall portion 34 carries an external thread which mates with an internal thread on valve cap 30. Valve cap 30 fits over an aperture or opening 36 in bottle 12. Aperture 36 is sealed in storage by means of cap 30 and cap 14. Extending

between side wall 22 and cap wall portion 34 is a tapered top wall 40. Tapered top wall 40 is generally frustoconical in shape along its major extent. It rounds into a generally circularly cylindrical portion proximate cap wall portion 34. Proximate side wall 32, it bounds one side of upper fastening groove 24.

FIGURES 4—7 show a preferred form of valve cap 30. Valve cap 30, as shown in those figures, includes a threaded base 42, a storage cap 44, a storage valve insert 46, and a diaphragm member 48. A valve of this general type is disclosed in U.S. Patent No. 4,226,342 issued October 7, 1980. The structure shown in Figures 4—7 includes a storage closure feature accomplished by storage cap 44 and storage valve insert 46. Storage cap 44 is an external, rotatable cap. As shown in FIGURE 7, it has a pair of arcuate gripping depressions 50 on opposite sides of its periphery. This is for the purpose of facilitating turning and understanding of operation of the storage valve by a user. Storage cap 44 is provided with a pair of apertures 52, 52 positioned on a diameter of cap 44. Mating storage valve insert 46 contains a pair of internal apertures 54, 54 positioned to register or coincide with apertures 52, 52 upon proper rotation of cap 44. As shown particularly in FIGURE 5, storage valve insert 46 has a raised center portion 56 which firmly mates against an internal surface of storage cap 44. It is expected that in operation of the apparatus of the invention, the valve formed by cap 44 and insert 46 will be opened by a user initially, and will not be reclosed during the life of the product unless the product is moved or stored.

A demand valve for dispensing of the liquid in bottle 12 during normal use is formed by the structure of diaphragm member 48 in the upper portion of threaded base 42. Diaphragm member 48 is a generally cylindrical diaphragm with a central passage 60 formed in it. Central passage 60 is generally circularly cylindrical in shape and has a cylinder wall section 62. In a non-expanded condition, diaphragm 48 has a portion of the periphery of cylinder wall section 62 in contact with a central disk 64. Diaphragm member 48 is biased in a direction to force such contact. When squeezing of the bottle causes development of internal pressure against diaphragm member 48, diaphragm member 48 moves in a direction (downward in FIGURE 5) to move cylinder wall section 62 away from disk 64 and open the valve.

As is shown particularly in FIGURE 4, disk 64 is supported by means of three legs 66 which extend at 120° angles. Each of legs 66 extends from the periphery or rim of threaded base 42 inward to contact the disk 64. In the structure shown, venting is accomplished by means of a pinhole 70 and passage 74 which permit air to return to the bottle by means of pinhole 70 upon release of manual pressure and closing of the diaphragm. Passage 74 is formed in a portion of the top of threaded base 42.

An alternative valve structure is shown in FIGURES 8 and 9. This structure consists of a

threaded base 80 which has a generally circular top wall 82. Top wall 82 closes off the aperture of the bottle on which the cap is placed with the exception of a passageway defined by tube 84.

5 Tube 84 runs generally transversely to the extent of top wall 82. Mounted to threaded base 80 by means of a pivot 86 is a spout member 88. Spout member 88 includes a passage 90 which runs longitudinally up the spout from one end thereof  
10 to a point proximate the top of tube 84. At the end of passage 90 proximate the top of tube 85, a plug 92 is formed in the passage. Plug 92 extends downward into tube 84 to seal it when spout member 88 is pivoted into a sealed position  
15 generally flush with the top of threaded base 80. To open the spout, a user presses on a tab 94. This causes spout 88 to pivot about pivot 86 and provide an open passageway through passage 90 and tube 84 into the bottle. In the embodiment of  
20 FIGURES 8 and 9, it is contemplated that, either the material dispensed will be viscous enough to prevent leakage out the passage when the bottle is in inverted condition, or the spout member will be closed after use to prevent such leakage. It will  
25 be apparent to those of skill in the art that the embodiment of FIGURES 4—7, due to its valve structure, provides an automatic closure function upon release of manual squeezing pressure on bottle 12.

30 The container of the present invention is intended to be sold and shipped in the FIGURE 2 configuration with hanger and storage cap 14 functioning to protect valve cap 30 and function as a protective closure for bottle 12. When use of  
35 the bottle commences, hanger and storage cap 14 is removed from its snap-fit position at one end of bottle 12 and is placed at the opposite end with lip 20 in cap fastening groove 26. The bottle is then inverted and placed on a shower curtain rod, tap  
40 stem, or other appropriate projection. Assuming the structure of FIGURES 4—7 is used as valve cap 30, storage cap 44 is rotated to bring apertures 52, 52 into alignment with internal apertures 54, 54. The bottle is then in a position  
45 for one-handed dispensing of the liquid soap or other material in the bottle. Upon application of manual squeezing pressure to the ovaloid side wall 22, internal pressure in the bottle moves diaphragm member 48 away from disk 64. This  
50 allows fluid to pass through open central passage 60, apertures 52, 52 and 54, 54 and out of the bottle for dispensing.

Upon release of pressure, diaphragm member 48 returns to a seated position and closes the  
55 valve. Venting of air back into the bottle to replace material dispensed occurs through pinhole 70 and passage 74.

While this portion of the application has discussed details of construction and operation of  
60 the invention for purposes of illustration and understanding, it will be understood that many modifications may be made by those of ordinary skill in the art without departing from the spirit and scope of the present invention. Such  
65 modification might include alternative valving,

other general shapes of hangers, differences in bottle shapes, and differences in the materials and specific pieces utilized to accomplish the functions of the various elements of the invention.

## 70 CLAIMS

1. A dispensing container for viscous liquids comprising:
  - (a) a hollow plastic bottle having side walls sufficiently resilient in nature to deform upon  
75 manual pressure, and having an apertured top and closed bottom;
  - (b) a valved cap mounted over said aperture to effect selectable closure of said bottle; and
  - (c) a hook-shaped cap adapted to be fastened  
80 over either end of said top or bottom.
2. The container according to claim 1, wherein the bottle possesses end walls and resilient side walls, and has an aperture in one of said end walls; valve means is mounted over said aperture to  
85 permit liquid to be selectively dispensed from the bottle; a storage cap closes said bottle; means on said storage cap defines a hook-like structure for support purposes; and means on said bottle and cap permit said cap to be fastened over either end  
90 wall, whereby said cap may protect said valve and aperture against damage or leakage during storage, and may be used to mount the bottle in inverted fashion to facilitate dispensing of liquid.
3. The container of claim 2, wherein said bottle  
95 has a side wall of generally ovaloid shape.
4. The container of any one of claims 1 to 3, wherein said side walls are of substantially identical cross-sectional shape proximate said top and bottom, and said hook-shaped cap is shaped  
100 at its open end to generally conform to the shape of said side walls proximate said top and bottom.
5. The container of claim 4, wherein one of said cap and bottle carries a peripheral groove and the other carries a peripheral lip, and said lip and  
105 groove mate to cause a snap-fit connection between the bottle and cap.
6. The container of any one of claims 1 to 3, wherein said storage cap has a hook-like structure formed proximate one end thereof, has an opening  
110 at its opposite end, and has a lip formed about the periphery of said opening; and said bottle has mating grooves formed proximate its end walls to permit fastening of said cap at either end thereof.
7. The container of claim 5, wherein said cap  
115 carries an inwardly directed lip and said bottle carries a pair of outwardly facing grooves, one each proximate the upper and lower ends of said side wall.
8. The container of any one of the preceding  
120 claims, wherein said valve means is constructed to open and close in response to changes in internal pressure of said bottle.
9. The container of any one of claims 1 to 7, wherein said valve means is constructed to be  
125 opened and closed manually by the user, and has an aperture sized with respect to the viscosity of liquid within which it is to be used such that said valve need not be closed in usage to prevent seepage when said bottle is mounted in inverted

fashion from a support.

10. The container of any one of the preceding claims, wherein said side walls at least are constructed of polyvinyl chloride.

5 11. A dispensing container for viscous liquids, substantially as hereinbefore described with

reference to Figures 1 to 3 of the accompanying drawings in association with Figures 4 to 7 or Figures 8 and 9.

10 12. A container as claimed in claim 11, which contains therein liquid soap or a skin care liquid.